

AD-A216 657

FREE COPY

1

## REPORT DOCUMENTATION PAGE

Form Approved  
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED	
	December 1989	presentation/paper	
4. TITLE AND SUBTITLE		5. FUNDING NUMBERS	
MARINE MAMMAL HEALTH MANAGEMENT BASED ON IMMUNE SYSTEM RESPONSE TO STRESS AND INFECTIOUS DISEASE		In-house	
6. AUTHOR(S)		8. PERFORMING ORGANIZATION REPORT NUMBER	
J. P. Schroeder			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)		10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
Naval Ocean Systems Center San Diego, CA 92152-5000			
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		11. SUPPLEMENTARY NOTES	
Naval Ocean Systems Center San Diego, CA 92152-5000			
12a. DISTRIBUTION/AVAILABILITY STATEMENT		12b. DISTRIBUTION CODE	
Approved for public release; distribution is unlimited.			
13. ABSTRACT (Maximum 200 words)			
<p>Knowledge of the interrelationship of stress, immunology and infectious disease is basic to management of preventive medicine programs. Diagnostic and prognostic indicators of the dynamics of this interrelationship are not as well defined in marine mammals as they are in terrestrial animals.</p> <p>Our objectives were to correlate a newly developed immune system indicator, radioimmunoassay of immunoglobulins, with some indicators of stress: erythrocyte sedimentation rate, serum cortisol levels, eosinophil numbers, free iron in serum, blood gasses and more traditional complete blood counts, to determine some effects of stressors on the immune system of five newly collected <i>Tursiops truncatus gilli</i>. This data was analyzed and related to the dolphins' responses to changes in bacteria cultured from their blow holes.</p> <p>Analysis of periodic blood samples indicated increased sedimentation rates within one week and decreasing sperm iron correlated with the change in bacterial flora from <i>Vibrio alginolyticus</i>, (normal in dolphins in Hawaii), to coagulase positive, Beta hemolytic, penicillin resistant <i>Staphylococcus aureus</i>. Several other parameters were measured and correlated with the progression of disease processes, from the collection data through adjustments to captivity.</p> <p>Application of new technology in stress assessment, epidemiology and immunology of marine mammals was important in health management decisions for these newly captured dolphins.</p>			
Published in <i>Proceedings First International Conference on Zoological and Avian Medicine</i> , September 1987.			
14. SUBJECT TERMS		15. NUMBER OF PAGES	
mammals health			
16. PRICE CODE			
17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNLIMITED

PROCEEDINGS  
FIRST INTERNATIONAL CONFERENCE  
on  
ZOOLOGICAL AND AVIAN MEDICINE

Sponsored by  
Association of Avian Veterinarians  
and  
American Association of Zoo Veterinarians

September 6-11, 1987  
Turtle Bay Hilton and Country Club  
Oahu, Hawaii

Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By NOSC	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	21

*[Handwritten marks: a large circle with a diagonal line through it, and the letters A-1 and 21.]*

MARINE MAMMAL HEALTH MANAGEMENT BASED ON IMMUNE SYSTEM RESPONSE  
TO STRESS AND INFECTIOUS DISEASE

J. P. Schroeder, DVM  
Naval Ocean Systems Center, Hawaii Laboratory, Kailua, HI

Knowledge of the interrelationship of stress, immunology and infectious disease is basic to management of preventive medicine programs. Diagnostic and prognostic indicators of the dynamics of this interrelationship are not as well defined in marine mammals as they are in terrestrial animals.

Our objectives were to correlate a newly developed immune system indicator, radioimmunoassay of immunoglobulins, with some indicators of stress: erythrocyte sedimentation rate, serum cortisol levels, eosinophil numbers, free iron in serum, blood gasses and more traditional complete blood counts, to determine some effects of stressors on the immune system of five newly collected Tursiops truncatus gilli. This data was analyzed and related to the dolphins responses to changes in bacteria cultured from their blow holes.

Analysis of periodic blood samples indicated increased sedimentation rates within one week and decreasing serum iron correlated with the change in bacterial flora from Vibrio alginolyticus, (normal in dolphins in Hawaii), to coagulase positive, Beta hemolytic, penicillin resistant Staphylococcus aureus. Several other parameters were measured and correlated with the progression of disease processes, from the collection date through adjustments to captivity.

Application of new technology in stress assessment, epidemiology and immunology of marine mammals was important in health management decisions for these newly captured dolphins.